

Add the following new claims.

--32. An antibody isolated by a method of producing an antibody of predetermined specificity, said method comprising the steps of:

(a) synthesizing a V_H -coding gene library containing a plurality of different V_H -coding DNA sequences by a method comprising the steps:

(i) preparing a polynucleotide containing composition, wherein at least a portion of the polynucleotides in said composition comprise a plurality of different V_H -coding sequences,

(ii) amplifying a plurality of V_H -coding sequences in said polynucleotide containing composition;

(b) synthesizing a V_L -coding gene library containing a plurality of different V_L -coding DNA sequences by a method comprising the steps:

(i) preparing a polynucleotide containing composition, wherein at least a portion of the polynucleotides in said composition comprise a plurality of different V_L -coding sequences,

(ii) amplifying a plurality of V_L -coding sequences in said polynucleotide containing composition;


(c) joining in operable combination V_H -coding sequences from said V_H -coding gene library with V_L -coding sequences from said V_L -coding gene library into expression vectors so as to be able to coexpress a V_H -coding sequence and a V_L -coding sequence from each vector, whereby a diverse library is formed;

(d) selecting and isolating from said diverse library at least one coexpression vector capable of producing polypeptides having the desired specificity;

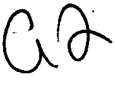
(e) transforming a host cell with said expression vector; and

(f) isolating an antibody encoded by said vector from said host cell.

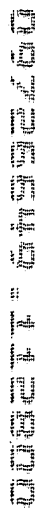
33. The antibody according to Claim 32, wherein said antibody is a catalytic antibody.

34. An antibody isolated by a method of producing of predetermined specificity, 
said method comprising the steps of:

(a) preparing a first polynucleotide containing composition, wherein at least a portion of the polynucleotides in said first polynucleotide containing composition comprise a plurality of V_H-coding sequences;

 (b) amplifying a plurality of V_H-coding sequences from said first polynucleotide containing composition by a method of amplification comprising the steps of adding primer sequences capable of hybridizing upstream and downstream from a plurality of said V_H-coding sequences under conditions permitting hybridization to occur, whereby a plurality of amplified V_H-coding sequences are produced and said amplified V_H-coding sequences form a V_H-coding library;

(c) preparing a second polynucleotide containing composition, wherein at least a portion of the polynucleotides in said second polynucleotide containing composition comprise a plurality of V_L-coding sequences;

 (d) amplifying a plurality of V_L-coding sequences from said second polynucleotide containing composition by a method of amplification comprising the step of adding primer sequences capable of hybridizing upstream and downstream from a plurality of said V_L-coding sequences under conditions permitting hybridization to occur, whereby a plurality of amplified V_L-coding sequences are produced and said amplified V_L-coding sequences form a V_L-coding library;

(e) joining in operable combination V_H-coding sequences from said V_H-coding library with V_L-coding sequences from said V_L-coding library into expression vectors so as to be able to coexpress a V_H-coding sequence and a V_L-coding sequence from each vector, whereby a diverse library is formed;

(f) selecting and isolating from said diverse library at least one coexpression vector capable of producing antibodies having the desired specificity;

(g) transforming a host cell with said expression vector; and

(h) isolating an antibody encoded by said vector from said host cell.

35. The antibody according to Claim 34, wherein said antibody is a catalytic antibody.

36. An antibody isolated by a method of producing an antibody molecule of predetermined specificity, said method comprising the steps of:

(a) producing a V_H -coding library and a V_L -coding library, by a method comprising the steps of:

- Q2
- (i) adding a first primer, wherein said first primer is capable of hybridizing to a first conserved nucleotide sequence substantially adjacent to a plurality of V_H -coding and V_L -coding sequences, and said coding sequences are present in a polynucleotide containing composition that comprises a plurality of different V_H -coding sequences and V_L -coding sequences,
 - (ii) adding a second primer to said nucleotide containing composition, wherein said second primer is capable of hybridizing to a second conserved nucleotide sequence substantially adjacent to a plurality of V_H -coding and V_L -coding sequences and said second conserved nucleotide sequence is not adjacent to said first conserved nucleotide sequence;

(b) joining in operable combination V_H -coding sequences from said V_H -coding gene library with V_L -coding sequences from said V_L -coding gene library into expression vectors so as to be able to coexpress a V_H -coding sequence and a V_L -coding sequence from each vector, whereby a diverse library is formed;

(c) selecting and isolating from said diverse library at least one coexpression vector capable of producing polypeptides having the desired specificity;

(d) transforming a host cell with said expression vector; and

(e) isolating an antibody encoded by said vector from said host cell.

37. The antibody according to Claim 36, wherein said antibody is a catalytic antibody.

38. An antibody comprising a V_H domain and a V_L domain, which domains are not encoded together in the genome of a single naturally occurring cell, said antibody being obtained from a genetic library which encodes a plurality of diverse V_H and V_L encoding sequences joined in operable combination and formed by random combination of cloned V_H and V_L encoding sequences.

112(b) - how to know??? \nearrow
112(c) - w.d.

39. The antibody of Claim 38, wherein said genetic library comprises at least 10,000 diverse V_H and V_L encoding sequences joined in operable combination.

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40. An antibody comprising a human V_H domain derived from a human antibody-encoding sequence, and a human V_L domain derived from a human antibody-encoding sequence, said V_H and V_L domains being not encoded together in the genome of a single naturally occurring cell.

41. An antibody comprising a V_H domain derived from a human, wherein said V_H domain is in association with a V_L domain with which it is not found in a naturally occurring cell.

112(b) - how to know??? -
112(c) - w.d.

42. A method for producing an antibody capable of binding a pre-selected antigen, said method comprising the steps of:

(a) providing a genetic library comprising plurality of diverse V_H and V_L encoding sequences in which each member of the library has a V_H and a V_L encoding sequence joined in an operable combination;

(b) screening said library with a antigen; and

(c) selecting an antibody capable of binding said antigen.

43. The antibody obtained by the method of Claim 42.

112(b) - depends from WITHIN CLAIM

44. The method of Claim 42, wherein said genetic library is provided by providing a first library comprising a diversity of V_H-encoding genes, a second library